Nature Conservation 44: 69–79 (2021)
doi: 10.3897/natureconservation.44.65124
https://natureconservation.pensoft.net

SHORT COMMUNICATION

A peer-reviewed open-access journal
Nature Conservation
Launched to accelerate biodiversity conservation

Zoos consenting to the illegal wildlife trade – the earless monitor lizard as a case study

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Academic editor: Mark Auliya | Received 26 February 2021 | Accepted 20 April 2021 | Published 14 June 2021

http://zoobank.org/E03711E8-003B-481F-8909-999773C87E95

Citation: Nijman V (2021) Zoos consenting to the illegal wildlife trade – the earless monitor lizard as a case study. Nature Conservation 44: 69–79. https://doi.org/10.3897/natureconservation.44.65124

Abstract

The illegal wildlife trade has direct relevance for zoo management, animal acquisition and disposition and it has no place in modern zoo management. Zoos must not only act within the law of the country in which it is based, but they should also follow the rules and intentions of international trade regulations and, where relevant, domestic laws of the animal's country of origin. After its rediscovery in 2012, zoos in Asia and Europe started displaying Bornean earless monitor lizards (*Lanthanotus borneensis*), the 'Holy Grail of Herpetology'. Earless monitor lizards have been legally protected in each of its three range countries for over four decades and, over this period, no specimen has ever been legally exported. However, the illicit trade in the species is thriving and individuals become more affordable. Using publicly available data, I present a timeline of how and from where a total of 16 zoos acquired their earless monitor lizards, including from private individuals and non-accredited zoos. Apart from one zoo in Japan (since 2012) and one zoo in the USA (since 2021), all non-range country zoos that currently display the species are based in Europe. Their absence prior to 2021 in US zoos (despite an increasing illegal trade) could be explained as the acquisition of earless monitor lizards would have been in violation of the Lacey Act (1900) that requires buyers to ensure that imported or purchased wildlife has not been taken in violation of any foreign law. While there is no evidence that any of the zoos, their directors or their staff have broken any laws – no-one in the zoo community has been convicted for illegally trading earless monitor lizards – with more zoos speaking out against the illegal wildlife trade, it is imperative that zoos behave in an exemplary manner and set high standards. At present, some zoos do not meet this standard.

Keywords

CITES, *Lanthanotus borneensis*, illegal wildlife trade, protected species management

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Introduction

The illegal wildlife trade is a global business (Halbwax 2020) that has direct relevance for zoo management, animal acquisition and disposition (Gusset et al. 2014). Zoos are becoming more vocal in expressing their concerns about the illegal wildlife trade and how it has no place in modern zoo management. An online search for WAZA (World Association of Zoos and Aquariums), AZA (Association of Zoos and Aquariums), EAZA (European Association of Zoos and Aquariums) and "illegal wildlife trade" brings up a plethora of initiatives where zoos and aquaria, governments, industry and conservation organisations collaborate to better protect wildlife from poaching, to improve wildlife trade regulations and to better inform (and harness the power of) zoo visitors. What may be lacking is a more introspective view, whereby zoos ensure that they are not, perhaps inadvertently, part of the problem. The more zoos and zoo associations speak out against wildlife trade, the more it must ensure that its own hands are clean. Zoos must act, not only within what is legally permitted, but they should also follow the rules and intentions which it clearly so vocally supports. Highlighting situations and examples where this is not the case or where zoos perhaps unintentionally contributed to the illegal trade, are important to improve policies, to more efficiently implement existing regulations and ultimately to better contribute to the conservation of imperilled species. The recent acquisition of earless monitor lizards (*Lanthanotus borneensis*) by accredited zoos (i.e. members of EAZA and/or WAZA) without there being any evidence of legal export from their range countries may give valuable insights into the interface between zoo policies, wildlife trade regulation and species management. It also highlights gaps in European legislation, which so far, does not prohibit the import, sale and possession of illegally-sourced species, other than those that are included in one of the appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES.

The earless monitor lizard is endemic to the island of Borneo and, given the lack of recent (post 1960s) sightings, was seen as a 'Holy Grail in Herpetology'. Despite the lack of observations, all three range countries included the species on their totally protected species lists (Malaysia in 1971, Brunei Darussalam in 1978 and Indonesia in 1980) (Nijman and Stoner 2014). This means that the species cannot be traded legally within these countries and it cannot be exported legally (note that, thus far, the species has not been recorded in the wild Brunei Darussalam, but there are records from within a few 100 km of its border and hence it may occur there). In September 2012, the rediscovery of the earless monitor lizard (in Indonesian Borneo) was announced (Yaap et al. 2012). From then on, the (potential) availability of the species as a pet or as part of a zoological collection was discussed on specialised (online) forums and in magazines. In July 2014, Nijman and Stoner (2014) published a report on the trafficking of earless monitor lizard and the urgency for international trade regulations to be implemented through CITES. In the months following the publication of the report by Nijman and Stoner (2014), the plight of the species, the threat that the illegal pet trade posed, the non-existence of captive breeding and the legal protection earless

monitor lizards receive in each of the three range countries was widely publicised. This included coverage by TRAFFIC, WWF, Mongabay, *Science*, *Newsweek*, *The Guardian*, *Der Spiegel*, it was the subject of a book chapter in '*Poached*' by Rachel Nuwer and numerous blogs and articles in national newspapers, in a wide range of languages, all of which reported on earless monitor lizard trade. The 'earless monitor lizard' page on Wikipedia, created in 2003, was updated with information on trade and on the species' protected status. The page's size increased tenfold between 2014 and 2017 from 2,410 to 23,271 bites and the number of views went up from ~ 20 day^{-1} in 2014 to ~ 200 day^{-1} in 2020, occasionally peaking at more than 2,000 views day^{-1}. In addition to the English Wikipedia page, numerous other language Wikipedia pages are dedicated to the species.

In 2015, Malaysia prepared a proposal to include the earless monitor lizard in Appendix I of CITES. This would effectively ban all international commercial trade. In early October 2016, at the request of Malaysia and in late consultation with Indonesia, the earless monitor lizard was included in Appendix II of CITES, thereby regulating all international trade. Ninety days later, i.e. early January 2017, this came into effect. Despite all international trade now only being allowed with permission from the exporting country (and in the EU additionally from the importing country), there is a lively illegal trade in the species for the high-end pet market. The USA, Austria and especially Germany stand out as important destinations; the only two smuggling attempts that have been thwarted (in October 2015 and March 2016) involved German nationals (Altherr 2014; Stoner and Nijman 2015; Auliya et al. 2016; Janssen and Krishnasamy 2018).

Here I report on the acquisition of earless monitor lizards by accredited zoos (i.e. members of EAZA and WAZA), the transfer of individuals between private individuals and zoos and vice versa and the implications this may have for conservation policy surrounding the earless monitor lizards. I show that there is no evidence of legal export from any of the species' range countries. My aim is to demonstrate that the acquisition of these protected lizards by zoos is neither in line with the intentions of national laws of the countries where the earless monitor lizards occur naturally, nor with international wildlife trade regulations and that they are diametrically opposed to the commitments the international zoo community has made to address the illegal wildlife trade.

Methods

Since the early 2000s, I have a professional interest in zoos, rescue centres and wildlife trade (many zoos act as rescue centres for specific taxa and rescue centres may be legally registered as zoos). I have spoken about the interplay between wildlife trade and captive management at national and international zoo conferences, discussed this topic with participants at these meeting, with zoo staff and directors, as well as with wildlife traders and published articles about this (e.g. Nijman 2006, 2013). For 12 years, I was a member of the Dutch CITES Scientific Authority and participated in the European CITES

Scientific Review Group, thus allowing me to familiarise myself with the import and export of animals in and out of the EU. In the period June 2014 to February 2021, I obtained data on the acquisition and presence of earless monitor lizards in zoos from their websites, their Facebook pages (when present), from press releases sent out by the zoos or by articles in the press. In February 2018, February 2020 and February 2021, I retrieved data on earless monitor lizards from the Zoological Information Management Software (ZIMS, https://zims.species360.org); this included data on the sex of the individuals and births (if any) in the last 12 months. ZIMS also lists all the names of the zoos and where they are located. In February 2021, data on international trade was retrieved from the CITES trade database (https://trade.cites.org/); this covers the period January 2016 to December 2020 (data from 2021 was not yet available). The independence of these datasets allowed me to cross-reference the data. When information was conflicting, I contacted the zoos via email (either the directors or the curators of reptiles) for clarification and confirmation. In March 2021, I additionally checked my data against that what was presented by Rehák et al. (2019). To gain insight into the reasons and justification of the trade in and the keeping of earless monitor lizards, I consulted Facebook pages (all open groups), online reptile forums, news articles and combined these with statements from those who keep earless monitor lizards and constructed a series of arguments justifying the keeping of these animals; these are paraphrased and some are combined, as to ensure the anonymity of the source.

Data on asking prices of earless monitor lizards offered for sale in European countries was obtained from online classified ads and private Facebook accounts; all prices were converted into Euros and adjusted for inflation to December 2020. Prices are for single individuals, whereas often pairs are offered for sale (in which case I divided the asking price by two). In trade, two morphs of earless monitor lizard are recognised, one more common greyish-brown morph and, since 2019, a rarer much darker, almost black morph. The prices included here are for the more common morph as prices for the rarer ones are considerably higher and can only be obtained by contacting the traders (something that was not done).

Results

While the species was included in CITES Appendix II in 2016 only (meaning the duty to report international trade to the CITES trade database from then on), any international trade before 2016 was in violation of national laws in the range states (CITES CoP17 Prop. 22). Data from the CITES trade database, required for any international trade after the listing of the species in 2016, show that, for earless monitor lizards, the legal international trade, interpreted in its widest sense, is very limited. The CITES Management Authorities of Indonesia and Malaysia (or Brunei Darussalam, again acknowledging that the species has not been recorded in the wild) have never reported the export of even a single individual. None of the other 180 countries that are signatory to CITES has reported the import of earless monitor lizards from Indonesia, Malaysia or Brunei

Darussalam. In 2017, the Czech Republic CITES Management Authority reported the import of one earless monitor lizard that was seized in Hong Kong and that originated from an unknown third country. In 2018, the Czech Republic reported the export of 12 captive-bred (hence second generation or above: see Discussion) earless monitor lizards originating from Austria to Canada. Austria did not report the import or export of any individuals and Canada did not report their import. As such, CITES-reported international trade in earless monitor lizards is thus fairly restricted. Only one country, the Czech Republic, ever reported the import or export of the species, none of which can be traced back to any of the three countries that make up the island of Borneo.

In Indonesia, three institutions, all on the island of Java, display earless monitor lizards, i.e. three in Batu Secret Zoo (part of Jatim Park 2), Batu, East Java, at least one in Taman Mini Indonesia Indah Reptile Park, Jakarta and 17 in Museum Zoologicum Bogoriense, Bogor, West Java (Arida et al. 2018). Based on my research, I could not record the species in any Malaysian zoos. Despite the lack of legal international trade, there are now at least sixteen zoos outside the range countries that display earless monitor lizards.

iZoo in Shizuoka prefecture, Japan opened in December 2012 and, by May 2013, it was the first zoo to have at least two earless monitor lizards, allegedly obtained from Borneo, on display. In July 2014, it was widely announced that the first offspring was born in the zoo, followed by four more in 2015 and 13 more in 2016. By 2017, at least 30 additional specimens had been acquired from private individuals in Europe. In 2017, the owner of iZoo Tsuyoshi Shirawa confirmed to investigative journalist Rachel Nuwer that, up until that time, none of the specimens in his care had died or had moved to other facilities (Nuwer 2018), suggesting that at least 50 earless monitor lizards were present in iZoo at that time. iZoo is not a member of AZA or WAZA and it has no entry on ZIMS and I have no information on current numbers.

BION Terrarium Center in Kiev, Ukraine. In June 2014, a video of two earless monitor lizards was uploaded on the YouTube channel of BION. The video has since been taken down and no more information is available.

Budapest Zoological and Botanical Gardens, Hungary. In October 2014, they received four unsexed earless monitor lizards from Robert Seipp in Germany (listed in ZIMS as the Senckenberg Museum für Naturkunde Goerlitz, with whom Seipp is connected); the animals were allegedly born in captivity in 2012 in Germany. In February 2021, they list one male and two females on ZIMS. No births have been reported.

Turtle Island, Graz, Austria. In 2015, it acquired two male and one female earless monitor lizard from a private individual in Hong Kong. In February 2017, it transferred one male to Prague Zoo. As of February 2020, one male and one female remain; to date, no breeding recorded.

Schönbrunn Zoo, Austria. It received two individuals in June 2015, four individuals in 2017 and another one in March 2019, all from one or more private individuals. In

March 2017, the zoo announced that it has managed to breed earless monitor lizards, as the second zoo in the world. In February 2021, ZIMS lists six males and six females.

Moscow Zoological Park, Russia. In November 2016, it received nine earless monitor lizards following a seizure of animals smuggled in from Hong Kong. In August 2018, it announced the birth of six earless monitor lizards from two females (see also Voronin and Kudryavtsev 2019) and, in October 2018, it acquired another two specimens from a private individual (Rehák et al. 2019). In February 2021, it lists three males, three females and nine unsexed individuals.

Prague Zoological Garden, Czech Republic, received seven earless monitor lizards in December 2016 from iZoo in Japan (note that these data contradict Mr Shirawa's account above) and, in November 2017, it imported one confiscated female from Hong Kong. For February 2018, ZIMS lists one female and seven unsexed individuals. Prague Zoo announced that, in August 2018, five specimens had hatched in its facilities. In February 2020, it lists one male, two females and 16 unsexed individuals, with 11 being born in the last 12 months; in February 2021, ZIMS lists one male, two females and eight unsexed individuals. Prague Zoo has transferred earless monitor lizards to a private collector, to Zoo Parc de Beauval, to Cologne Zoo (Rehák et al. 2019) and to Audubon Zoo.

Neunkircher Zoologischer Garten, Germany. According to the zoo's Facebook page, in May 2017, it obtained three individuals that were 'bred by a committed private owner in Germany'. In February 2018, 2020 and 2021, it lists three unsexed individuals in ZIMS. No births have been recorded.

Birmingham Wildlife Conservation Park, UK. ZIMS lists the transfer of three individuals to Birmingham in 2018 and another two in 2020. Some or all of these individuals are the results of confiscations at Heathrow Airport, London, but further details are lacking.

Zoo Parc de Beauval, France. In December 2019, it received one male and two female earless monitor lizards from Prague Zoo.

Cologne Zoo, Germany. For this zoo, one male and one female are listed in ZIMS in February 2020. Both were received from Schönbrunn Zoo in February 2020 (Rehák et al. 2019). In February 2021, ZIMS lists one male, one female and two unsexed individuals, with the additional two individuals being transferred from Prague Zoo in June 2020.

Tropicarium Park Jesolo, **Italy**. This zoo has been displaying the species since December 2019, but provides no details on numbers, sex or origin.

Vivarium Darmstadt, Germany. ZIMS lists the presence of one female since 2020. The origin of this specimen is not known.

Haus des Meeres, Aqua Terra Zoo Vienna, Austria. ZIMS lists the presence of one male and one female since 2021.

Tierpark Berlin-Friedrichsfelde, Germany. In February 2021, ZIMS lists three unsexed individuals.

Audubon Zoo, New Orleans, USA. In February 2021, it obtained ten earless monitor lizards from Prague Zoo (Polcar 2021).

Discussion

I herein report on the widespread acquisition of the earless monitor lizard, a protected species, by sixteen zoos, despite the absence of any evidence of legal export of the species from Indonesia, Malaysia or Brunei Darussalam or for the legal import of the species into the European Union. In their CITES proposal (CoP17 Prop. 32), the Malaysian authorities concluded that: "… the species is nationally protected in all three of its possible range states. Therefore, any species occurring outside of Borneo (for trade or otherwise) have been illegally obtained". It is evident that many of the earless monitor lizards on display in zoos at present were at one point illegally exported out of Indonesia, Malaysia or Brunei Darussalam and/or were illegally imported into non-range countries. Some are the direct offspring of individuals that were illegally traded. There is no evidence to suggest that any of the zoos, their directors or their staff have been fined or prosecuted for having committed a criminal offence or for having broken the law in any other manner. Three zoos received some or all of their earless monitor lizards after they were seized by the authorities (five individuals for Birmingham Wildlife Conservation Park, one individual for Prague Zoo and up to nine for Moscow Zoological Park).

At present, earless monitor lizards are primarily displayed in European zoos. Despite evidence of the species having been smuggled into the USA (Stoner and Nijman 2015; Janssen and Krishnasamy 2018), only in February 2021 were the first ten acquired by an American zoo (if *L. borneensis* were present in US zoos prior to this, it was not made public). In 1992 and 1994, after the species was included in the protected species lists of Malaysia, Brunei Darussalam and Indonesia, Cincinnati Zoo twice acquired a single specimen from private importers; both animals died within two years after arrival (Rehák et al. 2019). The acquisition of earless monitor lizards can be considered in violation of the US Lacey Act that requires buyers to ensure that imported or purchased wildlife has not been taken in violation of State or foreign law.

The linear increase of Bornean earless monitor lizards in European zoos coincides with an exponential decrease in prices in Europe (Figure 1). In 2014, when Budapest Zoo acquired its first specimens, inflation-corrected prices for a single individual averaged €8,167. Two years later, when four European zoos displayed the species, prices had dropped to €2,451. In 2020, with the species present in twelve European zoos, prices are down to €900. While there is no evidence of causation between the number of zoos that display the species and declining prices, it is evident that, as over time more zoos display the species, it becomes more achievable for private individuals (including visitors that may have firstly seen it in a zoo) to purchase one.

It is unclear from where the 12 captive-bred individuals originate, that the Czech CITES Management Authority reported as having been exported to Canada in 2018. The Canadian CITES Management Authority did not report their import and it is unclear where they ended up. There is also no evidence to support the claim that these specimens were 'captive-bred'. In CITES terminology, there is a difference between an animal that is born from one or two wild-caught parents and one that is born from parents that themselves were born in captivity. The first is referred to a captive-born and is given the

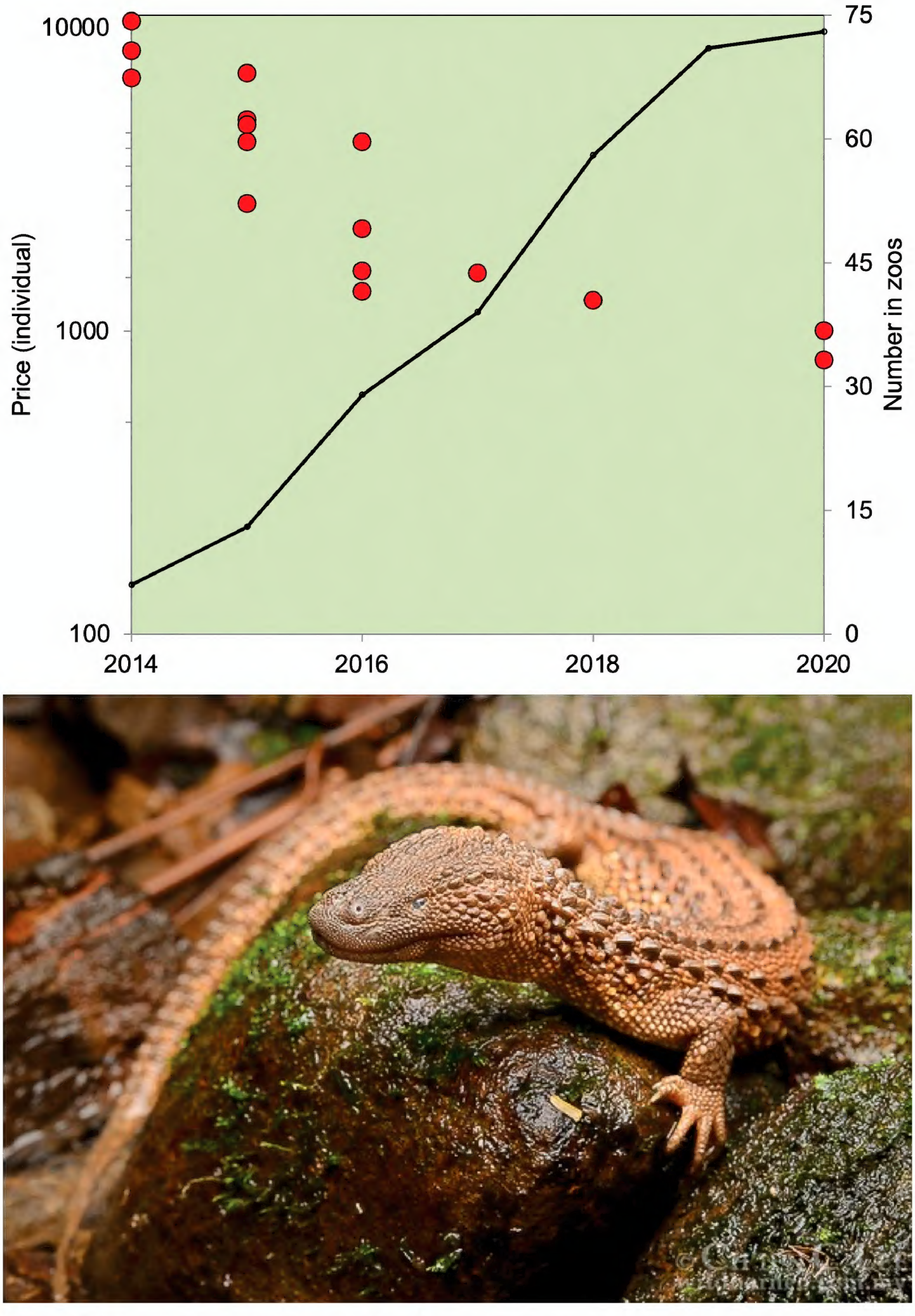

Figure 1. Borneo earless monitor lizards (*Lanthanotus borneensis*) in European zoos (cumulative number of individuals; continuous line) and price development in Europe (asking price for a single individual, in € corrected for inflation to 2020 prices; red circles). Note the logarithmic scale for prices. Photo: Chien C. Lee, Wild Borneo.

Table 1. Eight arguments for the justification of keeping earless monitor lizards (*Lanthanotus borneensis*) in accredited zoos; the order is not fixed. Compiled from statements made on Facebook posts, online reptile forums, email correspondence and discussions with keepers of earless monitor lizards; all paraphrased.

1. Trade is not the problem, deforestation is, or poor governance. Deforestation and poor governance.
2. Illegal trade is a problem, but others do it, private individuals or non-accredited zoos, not us.
3. I just got mine from a friend (in exchange for a turtle), it is not as if I am doing the smuggling myself; and no, I did not ask where she got it from, this is all very sensitive and there is no legal obligation for me to ask those kinds of questions.
4. I do not buy smuggled animals; I just buy their offspring. The animal is technically not mine. I just take care of him so he can breed with my female.
5. Smuggling is a problem, people have done things they should not have, but let bygones be bygones and make the best of a bad situation; let's all think of the best interest of the animals.
6. Now we have the earless monitor lizards, we have to make good use of them; it is better to have them inside zoos than in private hands. It is not that we have broken any laws or that anyone we are dealing with was convicted of reptile smuggling.
7. See how useful our animals are for research and education – we now know things we never knew before. We now know how to keep them in a captive setting, how to breed them and how to best display them to the public.
8. Our population is of vital importance to the survival of the species; it has an immense conservation value.

source code 'F', the second is referred to as captive-bred and is given the source code 'C'. I have no evidence that any of the earless monitor lizards born in a zoo has been in fact captive-bred. There are no breeding programmes (e.g., EAZA's European Endangered Species Programmes, European Studbooks, Regional Collection Plans) for *L. borneensis*, although several of the zoos, listed above, have made reference to 'conservation breeding' or a 'European breeding programme'. Likewise, private individuals, NGOs and companies have made reference to captive breeding programmes with conservation benefits. Zoos often see themselves as champions for conservation (Norton et al. 2012; Fa et al. 2014; Raghavan et al. 2015) and perhaps the zoos that maintain earless monitor lizards genuinely believe that they are doing the right thing in acquiring, keeping, displaying and, in some cases, breeding them (Table 1). An equally valid point would be to conclude that they legitimise the trade in the species and that, thereby, zoos directly hinder in the conservation of this species. Even if not a legal requirement of the country in which they operate, zoos have the moral obligation to ensure that the animals they acquire are from legitimate sources and this includes acquisition of parent stock. This is especially the case for European zoos, as long as the EU legislation does not yet explicitly prohibit the import, sale and possession of illegally-sourced species not included in the appendices of CITES. As indicated earlier, rescue centres may be legally registered as zoos and many zoos take in animals that were confiscated by the authorities. While, in some cases, zoos are indeed best placed to take care of confiscated earless monitor lizards, the zoo community has a duty to ensure that this is not a route to launder illegally-acquired animals.

Four of the zoos, listed above, are genuinely breeding earless monitor lizards and so do several hobbyists (e.g. Zollweg and Seipp 2017). Soon the first zoo will breed them to the second generation freeing up the option to export to the USA, as for captive bred earless monitor lizards from a reputable European zoo, even the US Lacey Act will have lost its teeth (it is currently unclear if the specimens exported from Prague Zoo to Audubon Zoo are listed as captive-bred). Perhaps by then, some zoos may have

managed to legitimately import the species from Indonesia or Malaysia, possibly as part of a breeding exchange. With a mixture of fully legal, semi-legal, half legal and illegally-obtained earless monitor lizards in their collections and, in the absence of any legal challenges, zoos will be seen to be in the clear. This then would open up the possibility for the zoo community to come together and re-introduce some of 'their' earless monitor lizards back into the wild as part of a conservation programme.

Acknowledgements

I thank the directors and keepers of the institutions who responded to my queries and to check the veracity of the data I present. I thank two reviewers and the associate editor for constructive comments and suggestions.

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